

5 We claim:

13. A composite comprising

10 Aa) at least one first layer which comprises a mixture Ia, comprising a mix IIa consisting of

a) from 1 to 95 % by weight of a solid III, preferably a basic solid III, having a primary particle size of from 5 nm to 20 μm and

b) from 5 to 99 % by weight of a polymeric composition IV obtainable by polymerization of

20 b1) from 5 to 100 % by weight, based on the composition IV, of a condensation product V of

α) at least one compound VI which is able to condense with a carboxylic acid or a sulfonic acid as defined in β or a derivative or a mixture of two or more thereof, and

β) at least 1 mol per mol of the compound VI of a carboxylic acid or sulfonic acid VII which contains at least one free-radically polymerizable functional

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group, or a derivative thereof or a mixture of two or more thereof,

and

- 5 b2) from 0 to 95 % by weight, based on the composition IV, of a further compound VIII having a mean molecular weight (number average) of at least 5000 and polyether segments in the main chain or a side chain,

10 where the proportion by weight of the mix IIa in the mixture Ia is from 1 to 100 % by weight,

and the layer is free of an electron-conducting, electrochemically active compound,

15 and

- B) at least one second layer which comprises a polymeric binder and an electron-conducting, electrochemically active compound,

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wherein the first layer or layers and the second layer or layers are joined to one another by one of the two methods V1 or V2:

- 25 V1) Lamination of the first layer or layers with the second layer or layers under the action of heat or under the action of heat and pressure, or

- 30 V2) Corona treatment of the first layer or layers, the second layer or layers or the first layer or layers and the second layer or layers and subsequent bringing together of the corona-treated first layer or layers with the corona-treated second layer or layers.

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14. A composite comprising

Ab) at least one first layer which comprises a mixture Ib comprising a
mix IIb consisting of

a) from 1 to 95 % by weight of a solid III, preferably a basic
solid, having a primary particle size of from 5 nm to 20 μ m
and

b) from 5 to 99 % by weight of a polymer IX obtainable by
polymerization of

b1) from 5 to 75 % by weight, based on the polymer IX, of a
free-radically polymerizable compound X selected from the
group consisting of

olefinic hydrocarbons, (meth)acrylonitrile, halogens
containing olefinic compounds, vinyl alcohol, vinyl acetate,
N-vinylpyrrolidone, N-vinylimidazole, vinyl formamide,
phosphonitrilic chlorides and derivatives thereof which are
partly or completely substituted by alkoxy, phenoxy, amino
and fluoroalkoxy groups, aromatic olefinic compounds and
vinyl ethers, and which is different from the carboxylic acid
or the sulfonic acid VII or a derivative thereof, or a mixture
of two or more thereof,

and

b2) from 25 to 95 % by weight, based on the polymer IX, of a
further compound VIII having a mean molecular weight

(number average) of at least 5000 and polyether segments in the main chain or a side chain,

where the proportion by weight of the mix Ib is from 1 to 100 % by weight

and the layer is free of an electron-conducting, electrochemically active compound,

and

B) at least one second layer which comprises an electron-conducting, electrochemically active compound,

wherein the first layer or layers and the second layer or layers are joined to one another by one of the two methods V1 or V2:

V1) Lamination of the first layer or layers with the second layer or layers under the action of heat or under the action of heat and pressure, or

V2) Corona treatment of the first layer or layers, the second layer or layers or the first layer or layers and the second layer or layers and subsequent bringing together of the corona-treated first layer or layers with the corona-treated or untreated second layer or layers.

15. A composite comprising
 - at least one first layer Aa or at least one first layer Ab or at least one first layer Aa and at least one first layer Ab,
 - at least one second layer B,
 - each as defined in claim 13, and

C) at least one bonding layer.

16. A composite as claimed in claim 15, wherein the bonding layer or layers C
 5 has/have a melting point which is lower than the melting point of the first
 layer or layers or the second layer or layers or the first and second layer or
 layers.
17. A composite as claimed in claim 15, wherein the bonding layer or layers C
 10 is/are a polyethylene oxide, a polyvinyl ether, a polyacrylate, a
 polymethacrylate, polyvinylpyrrolidone, a polyurethane, a wax-like
 (co)polyolefin, a rubber-like material, polyisobutylene or a mixture of two
 or more thereof.
18. A composite as claimed in claim 15, wherein the bonding layer or layers C
 15 comprise(s) a solid III, a plasticizer or a combination of two or more
 thereof.
19. A process for producing a composite as claimed in claim 13, which
 20 comprises joining the first layer or layers and the second layer or layers
 and, if present, the bonding layer or layers to one another by hot
 lamination.
20. A process for producing a composite as claimed in claim 14, which
 25 comprises joining the first layer or layers and the second layer or layers
 and, if present, the bonding layer or layers to one another by hot
 lamination.
21. A process for producing a composite as claimed in claim 13, which
 30 comprises subjecting the first layer or layers or the second layer or layers
 or the first layer or layers and the second layer or layers to a corona

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treatment and subsequently joining the first corona-treated layer or layers to the second corona-treated or untreated layer or layers.

22. A process for producing a composite as claimed in claim 14, which comprises applying at least one bonding layer to the first layer or layers, the second layer or layers or the first and the second layer or layers and subsequently joining the first layer or layers to the second layer or layers via the bonding layer or layers.

23. A process for producing a composite as claimed in claim 15, which comprises applying at least one bonding layer to the first layer or layers, the second layer or layers or the first and the second layer or layers and subsequently joining the first layer or layers to the second layer or layers via the bonding layer or layers.

24. Method of using a composite as claimed in claim 13 electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

25. Method of using a composite as claimed in claim 14 for producing an electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

26. Method of using a composite as claimed in claim 15 for producing an electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

27. An electrochemical cell comprising a composite as claimed in claim 13 or a combination of two or more thereof.

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28. An electrochemical cell comprising a composite as claimed in claim 14 or a combination of two or more thereof.

29. An electrochemical cell comprising a composite as claimed in claim 15 or a combination of two or more thereof.

30. Method of using the electrochemical cell as claimed in claim 23 as an automobile battery, instrument battery, planar battery or polymer battery. --